

IN THE SPECIFICATION

[0014] FIG. 4 is a ~~partial cross-sectional view taken along line 4-4 of FIG. 1~~ view similar to Figure 3, with the wall in the collapsed position;

[0022] FIGS. 1-11 illustrate a collapsible container 10 in accordance with the present invention. As shown in FIG. 1, container 10 includes a generally horizontal base 12 and four walls 14, 16, 18, 20 pivotally attached to the base. Container 10 is generally symmetrical about each center line, and while shown as rectangular may also be square or other configurations without departing from the teachings herein. Walls 14 and 16 are generally referred to as side walls while walls 18 and 20 are referred to as end walls. Container 10 is collapsible between an assembled orientation where the walls are upstanding from the base (FIG. 1), and a collapsed orientation (FIG. 4.) Container 10 is typically formed of a polymeric material such as polypropylene via an injection molding process, but may be formed from other materials and processes without detracting from the teachings herein. As shown in FIGS. 2-5, walls 14-20 and base 12 have corresponding and mating hinge members which are attached to form hinge assemblies 22. FIGS. 3-4 illustrate partial cross-sectional views of a first hinge portion 22a of hinge assembly 22 taken generally along the line 3-3 of FIG. 1, where FIG. 3 illustrates the first hinge portion when the corresponding wall 18 is oriented upright in an assembled orientation. FIG. 4 illustrates the first hinge portion 22a of hinge assembly 22 in a cross-sectional view taken along a line similar to that shown in FIG. 3, but with the corresponding wall 18 in the inwardly collapsed position. First hinge portion 22a includes first upper hinge portion 24 and first lower hinge portion ~~[[34]]~~ 27. FIG. 5 illustrates a second hinge portion 22b of hinge assembly 22 having a second upper hinge portion 28 and a second lower hinge portion ~~[[42]]~~ 34.

[0023] As shown in FIG. 2, each wall 14-20 has a lower edge having an upper hinge portion 23 extending downwardly therefrom. Upper hinge portion 23 includes a plurality of first upper hinge portions 24 having a generally cam-shaped cross-section, as illustrated in FIGS. 3 and 4. First upper hinge portions 24 are supported by downwardly extending arms 26 attached to the lower edge of the respective wall member. Upper hinge portion 23 also includes one or more second upper hinge members 28 disposed between

at least one pair of adjacent first upper hinge members 24. Second upper hinge members 28 more particularly extend between adjacent arms 26 as illustrated in FIG. 2. As shown in FIG. 5, second upper hinge member 28 has a cylindrical cross-section and, in association with second lower hinge portion 34, serves to minimize or prevent any slight movement or play between walls and base 12 upon assembly. As illustrated in FIGS. 1 and 2, each wall 14-20 has a plurality of first upper hinge portions [[22a]] 24, including proximate the corner area 30 of base 12.

[0024] Base 12 includes a plurality of lower hinge portions 32 for receiving upper hinge portions 23 therein. More particularly, base 12 includes a first lower hinge portion [[34]] 27 for receiving therein and securing first upper hinge portion 24. Base 12 also includes a second lower hinge portion [[42]] 34 for receiving second upper hinge portion 28. First lower hinge portion [[34]] 27 includes a upstanding receiver arm 36 having a generally open area 38 therearound. Arm member 36 includes an upper portion having a downwardly extending flange 40. As further illustrated in FIG. 4, the upper hinge configuration 23 is designed to assemble to base 12 when in the inwardly folded position. Accordingly, the cross-section of first upper hinge member 24 includes a generally flat surface 25. As the flat surface 25 of first upper hinge member 24 is downwardly inserted into area 38, flat surface 25 exerts a slight interference with flange 40, causing flange 40 to flex and deform slightly inward, allowing first upper hinge member 24 to move downwardly past and below flange 40. Subsequently, flange 40 returns to its normal, unbiased position as shown in FIG. 3, as the corresponding wall member 18 is pivoted upwards to its assembled orientation. In its normal position, flange 40 acts as a stop to provide interference for upper hinge portion 24 and keep it securely retained to base 12.

[0025] With reference to FIG. 5, second upper 28 and lower hinge portions [[42]] 34 are shown therein. During assembly as shown in FIG. 4, second upper hinge portion 28 is received securely within a recessed area 44 of second lower hinge portion [[42]] 34. Recessed area 44 is sized to receive second upper hinge portion 28 securely and therein. The snug fit between second upper and lower hinge portions 28, [[42]] 34 of hinge assembly 22 serve to impede the play of the walls relative to the base found in many prior art containers. Recessed area 44 is correspondingly sized to receive the second elongate

upper hinge member 28 therein in a slight interference fit for limiting lateral movement between the side walls and the base. The second upper hinge member 28 preferably has a cylindrical cross-section for allowing it to pivot easily even with its secure fit, while giving away little or no lateral movement between the walls and the base.